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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/678,142	10/03/2000	Noriaki Sakamoto	10417-049001	6940
26211	7590	01/21/2004	EXAMINER	
FISH & RICHARDSON P.C. 45 ROCKEFELLER PLAZA, SUITE 2800 NEW YORK, NY 10111			NORRIS, JEREMY C	
			ART UNIT	PAPER NUMBER
			2827	

DATE MAILED: 01/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/678,142

Applicant(s)

SAKAMOTO ET AL.

Examiner

Jeremy C. Norris

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-43 is/are pending in the application.
- 4a) Of the above claim(s) 27-31 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 and 32 is/are allowed.
- 6) ☒ Claim(s) 1, 4-8, 12-18, 20, 22 and 33-40 is/are rejected.
- 7) ☒ Claim(s) 9-11, 19, 21, 23-25 and 41-43 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Drawings

New corrected drawings are required in this application because although the content of the changes made by Applicants is acceptable, the drawings themselves are informal. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 12-18, 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,796,590 (hereafter Klein).

Klein discloses, referring to figure 4, a sheet-like board member comprising: a first planar surface; a second planar surface disposed opposite to the first planar surface; protuberances formed on said second planar surface; a conductive film on each of said protuberances (300), wherein the protuberances comprise a plurality of first pads in or in the vicinity of a semiconductor element (210) mount region defined on the second planar surface [claim 12], wherein the protuberances comprise wirings (101) integrally formed with the first pads [claim 13], wherein the protuberances comprise second pads (220) integrally formed with the wirings [claim 14], wherein the first pads comprise bonding pads, or pads on which solder balls or bumps are mounted [claim 15], wherein the protuberances comprise die pads provided in the semi-conductor element mount region [claim 16], wherein the protuberances comprise passive element die pads and/or outer lead electrodes [claim 17], wherein a passive element to be disposed on the passive element die pad comprises a chip resistor or chip capacitor (see col. 1, lines 55-60) [claim 18], wherein the protuberances are arranged in a plurality of patterns as a unit, and the unit is arranged in a matrix pattern on the sheet-like board member [claim 20], wherein the conductive coating film is formed of material different from that of the protuberances and formed on the upper surfaces of the protuberances [claim 22], wherein the conductive film comprises Ni, Au, Ag or Pd (see col. 8, lines 5-20).

Claims 33-40 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,042,682 (hereafter Funaya).

Funaya discloses, referring to figures 2A-2E, a sheet-like board member comprising: a first planar surface; a second planar surface disposed opposite to the first surface, said second planar surface having a semiconductor element (6) mount region defined thereon; and a mask (3) for etching (see col. 12, lines 40-65) disposed on the second planar surface and having a pattern corresponding to a plurality of first pads (2) formed in or in the vicinity of the semiconductor element mount region [claim 33], wherein the mask comprises a photoresist (see 11, lines 55-65) [claim 34], wherein the mask comprises a conductive film (see col. 12, lines 1-5) [claim 35], further comprising: a wiring disposed on said second planar surface, wherein the mask is formed on a region corresponding to the wiring integrally connected to one or more of the first pads [claim 36], wherein the first pads are bonding pads or pads on which solder balls are to be fixed [claim 37], wherein the conductive coating film is disposed in the semiconductor element mount region to form a die pad [claim 38], wherein the conductive coating film is disposed on the second planar surface to form a passive element die pad and/or outer lead electrode [claim 39], wherein a passive element to be placed on the passive element die pad comprises a chip resistor or a chip capacitor [claim 40].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 4-6, 12, 13, 15, and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,818,697 (hereafter Armezzani) in view of US 6,329,605 (hereafter Beroz).

Armezzani discloses, referring to figure 4, a sheet-like board member (1) including a first planar surface and a second planar surface provided opposite the first surface, comprising: mask (5) which is formed on the second surface and has a pattern corresponding to a plurality of first pads (8) formed in a semiconductor element mount region or in the vicinity of the semiconductor element mount region (see col. 2, lines 15-

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20). Armezzani does not specifically state that the mask is formed of a conductive film [claim 1]. Beroz teaches using a conductive permanent solder mask to prevent short circuits between solder pads (see abstract). Therefore, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to use the conductive mask taught by Beroz as the permanent solder mask in the invention of Armezzani. The motivation for doing so would have been to provide a solder mask that not only prevents short circuits between solder pads but also performs as a shielding plane, reducing interference effects and thus making the device more reliable (see abstract of Beroz).

Additionally, the modified invention of Armezzani discloses, a wiring disposed on said second planar surface, wherein the mask is formed on a region corresponding to the wiring integrally connected to one or more of the first pads [claim 4], wherein the first pads are bonding pads or pads on which solder balls (9) are to be fixed [claim 5], wherein the conductive coating film is disclosed in the semiconductor element mount region to form a die pad [claim 6].

Additionally, the modified invention of Armezzani discloses a sheet-like board member (1) including a first planar surface and a second planar surface on which protuberances (8) of desired heights are formed and which is provided opposite the first planar surface, wherein the protuberances constitute a plurality of first pads in a semiconductor element mount region and the vicinity thereof [claim 12], wherein the protuberances constitute the wirings (7) integrally formed with the first pads (see figure 5) [claim 13], wherein the first pads and/or second pads are bonding pads, or pads on which solder balls or bumps are to be mounted [claim 15], wherein the protuberances

constitute die pads to be provided in the semiconductor element mount region [claim 16].

Claims 1, 7, 8, 12-14, 17, 18, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,377,464, granted to Hashemi et al. (hereafter Hashemi).

Hashemi discloses, a sheet-like board member (102) including a first planar surface and a second planar surface provided opposite the first surface, comprising: mask (402) which is formed on the second surface and has a pattern corresponds to a plurality of first pads (116) formed in a semiconductor element mount region or in the vicinity of the semiconductor element mount region (see col. 5, lines 15-20) [claim 1], wherein a conductive coating film or photoresist film which is substantially identical with a passive element die pad (114) and/or outer lead electrode is formed on the second surface [claim 7], wherein the passive element is a chip resistor or a chip capacitor (see col. 4, line 1) [claim 8].

Additionally, Hashemi discloses a sheet-like board member (102) including a first planar surface and a second planar surface on which protuberances (116) of desired heights are formed and which is provided opposite the first planar surface, wherein the protuberances constitute a plurality of first pads in a semiconductor element mount region and the vicinity thereof [claim 12], wherein the protuberances constitute the wirings (402) integrally formed with the first pads [claim 13], wherein the protuberances constitute second pads (112) integrally formed with the wiring [claim 14], wherein the protuberances constitute passive element die pads and/or outer lead electrodes [claim 17], wherein the passive element is a chip resistor or chip capacitor [claim 18], wherein

a plurality of patterns formed from the protuberances are taken as a unit, and the unit is arranged on the sheet-like board member in a matrix pattern (see figure 3), [claim 20].

Response to Arguments

Applicant's arguments with respect to claims 1, 4-8, 12-18, 20, 22, and 33-40 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

The indicated allowability of claims 3 and 22 is withdrawn in view of the newly discovered references cited above. Rejections based on the newly cited reference(s) are stated above.

Claims 26 and 32 are allowed.

Claims 3, 9, 10, 11, 19, 21, 23-25, and 41-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

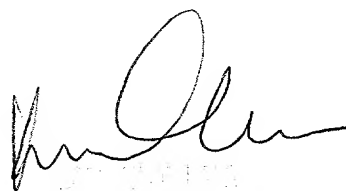
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 571-272-1932. The examiner can normally be reached on Tuesday - Friday, 10am - 7pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-308-0725.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JCSN



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ART UNIT 2827
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